

A NEW SPECIES OF *FOLSOMIA* (COLLEMBOLA: ISOTOMIDAE) FROM BRAZIL, WITH NOTES ON FOIL-SETAE IN THE *FIMETARIA* GROUP

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Abstract.—*Folsomia wellingdae* Potapov & Culik, NEW SPECIES belongs to the *fimetaria* group being close to *F. fimetaria* (Linnaeus), *F. kerni* Gisin, *F. stella* Christiansen & Tucker, and their allies. This new species differs by having two “corner” sensilla on the mesothorax and a well differentiated group of foil-setae on the last abdominal segment. The latter character is of importance in the taxonomy of this group of species.

Key Words.—Insecta, Collembola, Isotomidae, *Folsomia*, *fimetaria* group, foil-setae, Brazil.

Knowledge of the occurrence and ecology of Collembola is lacking, especially in Neotropical and agricultural environments (Mari Mutt & Bellinger 1990, Crosley et al. 1992). Therefore, a project to study Collembola of agricultural soils in Espírito Santo, Brazil, was initiated in 1999 (Culik et al. 2000). During this research a new species of *Folsomia* was found which is described here.

FOLSOMIA WELLINGDAE POTAPOV & CULIK, NEW SPECIES

Types.—Holotype, female; data: BRAZIL. *ESPÍRITO SANTO*: Domingos Martins Municipality, 20°23' S, 41°03' W, 4 Jul 2000, M. Culik, ex. soil, Latossolo, Site B, approximately 950 m el; deposited: Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo. Paratypes, 2 females; data: same as holotype; deposited: Moscow State Pedagogical University (MSPU), Moscow. 1 juvenile; data: same as holotype except Site A, approximately 1010 m el; deposited: Museu de Zoologia da Universidade de São Paulo (MZUSP), São Paulo. 2 females; data: same as holotype except collected 21 Dec 1999, Site C, ex. soil, Aluvial; deposited: Universidade Federal do Espírito Santo (UFES), Vitória.

Description.—Body length up to 1.2 mm. Pigment and ommatidia absent. PAO elliptical, about as long as Ant. I width, and 1.5× length of inner edge of unguis III, with a weak constriction and no inner “denticles” (Fig. 3). Maxillary palp bifurcate, outer maxillary lobe with 4 sublobal hairs. Labral formula 4/554. Ventral side of head with 4+4 postlabial setae. Labium as common for the genus, with 4 basomedial and 3 proximal setae, and 16 guards. Ant. I with 2 small basal microsensilla, dorsal and ventral, and 2–3 sensilla (Fig. 3); Ant. II with 3 basal microsensilla and 1 sensillum; Ant. III with 4 common and a single lateral sensillum, without microsensilla; Ant. IV without strongly broadened sensilla. Sensilla on body long, setae-like, little different from common setae. Sensillar formula for Th. II—Abd. V: 4,4/2,2,2,3,5 (s), 1,0/1,0,0,0,0 (ms). On Th. II—Abd. IV, medial sensilla situated in p-row (Fig. 4). Lateral abdominal sensilla blunt or clavate, especially on last two abdominal segments (Fig. 5). Abd. V with 5+5 sensilla, anterior and lateroventral sensilla shorter (Fig. 7). Macrosetae 1,1/3,3,3,4 in number, acuminate and weakly serrate (Fig. 5). Medial macrosetae on Abd. V 3–4× length of mucro. Abd. VI with a group of 14 foil-setae, two of which are unpaired. Foil-seta fl thicker and

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longer (Figs. 5, 7, 10), $0.7\text{--}0.9\times$ length of medial macroseta of Abd. V. Axial setae (of one side): 10, $8/4$, 4, 4. Th. III with 14–16 setae in p-row (sensilla not counted). No ventral setae on thorax. Unguis with inner tooth, no lateral teeth. Retinaculum with 4+4 teeth and one seta on corpus. Ventral tube with 4–6+4–6 latero-distal and 5 posterior setae. Anterior furcal subcoxa with 14–16, posterior with 6 setae. Anterior side of manubrium with 3–5+3–5 setae arranged in two irregular longitudinal lines, an apical pair of setae longest, some of the proximal setae very close to medial line (Figs. 1, 2). Manubrium on posterior side with 5+5 latero-basal, 6+6 central, 3+3 distal, and 1+1 apical setae. Lateral sides of manubrium with 2+2 setae. Dens with 20–22 anterior setae and 5(–6) posterior setae (3 basal, 2 medial, and usually, a sixth, minute, seta near the mucro can be observed) (Fig. 1). Mucro bidentate. Ratio manubrium:dens:mucro = 4–5:8–9:1.

Diagnosis.—*Folsomia wellingdae* differs from other *Folsomia* species in having two “corner” sensilla on each side of the mesothorax, and Abd. VI with a group of 14 foil-setae, one pair of which is longer than the others.

Distribution.—Known only from three field sites located within approximately 1000 m of each other at the Instituto Capixaba de Pesquisa, Assistência Técnica e Extensão Rural—INCAPER Centro Regional Desenvolvimento Rural—Centro Serrano (CRDR-CS), Domingos Martins Municipality, Espírito Santo, Brazil. *Folsomia wellingdae* was found in relatively low numbers compared to other (dominant) Collembola species present (unpublished data) but in a variety of soil conditions and is thus likely to be more widely distributed.

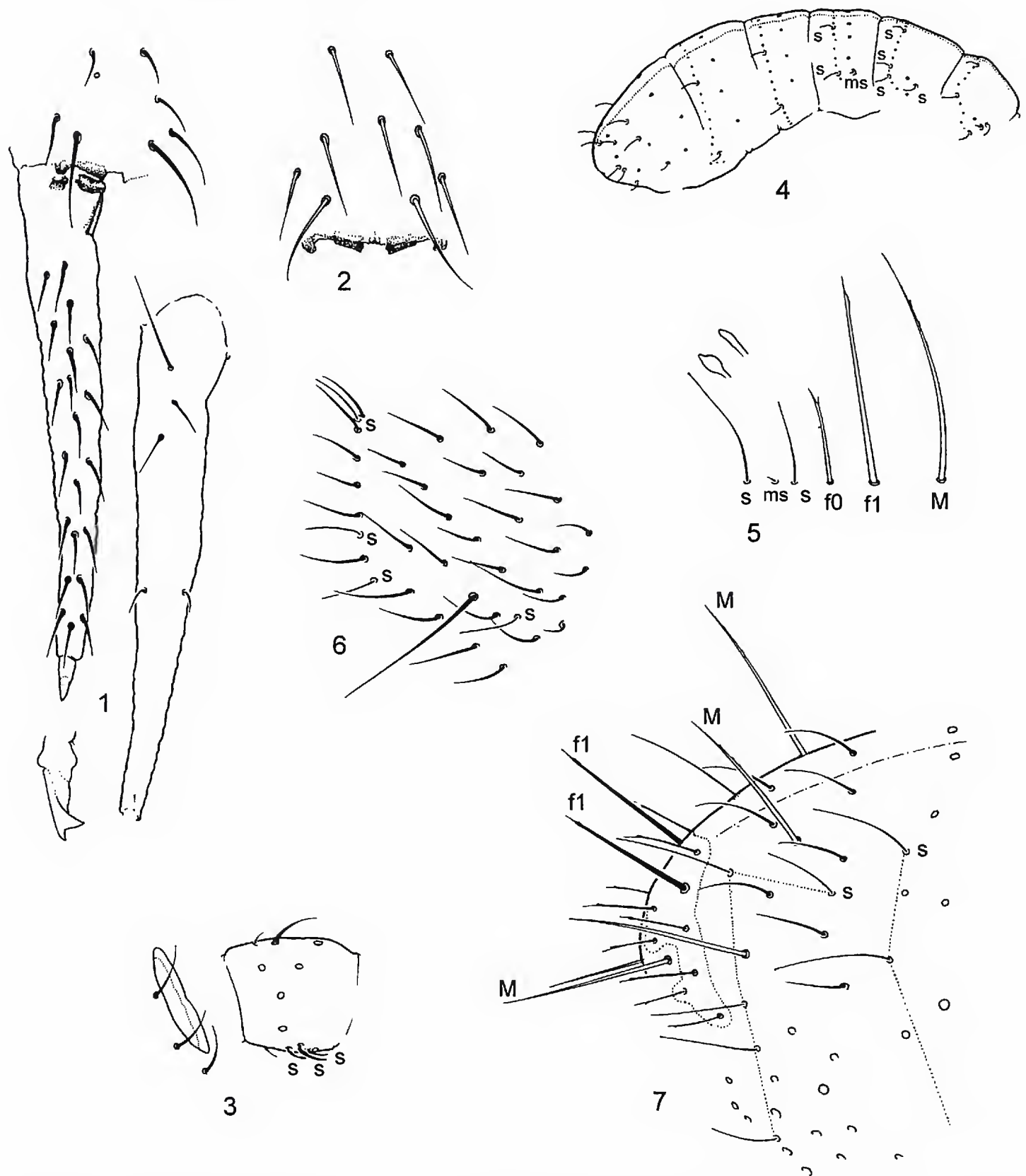
Etymology.—This species is named for Professor Wellingda Boni Sousa for enabling M. Culik’s research on Collembola in Brazil.

Material Examined.—See Types.

Discussion.—*Folsomia wellingdae* belongs to the *finetaria* group by having body sensilla in the p-row, absence of broadened sensilla on Abd. V, and presence of only one pair of macrosetae on each of Th. II and III. From all members of this group, *F. wellingdae* differs in having two “corner” sensilla on each side of the mesothorax (Figs. 4, 6) so each side of this segment bears 4 sensilla total. Each side of the mesothorax of all other species of *Folsomia* in which this character has been examined (Potapov 2001a, in press) bears 3 sensilla with a single “corner” sensillum (e.g., Potapov & Stebaeva 1977; Fig. 3).

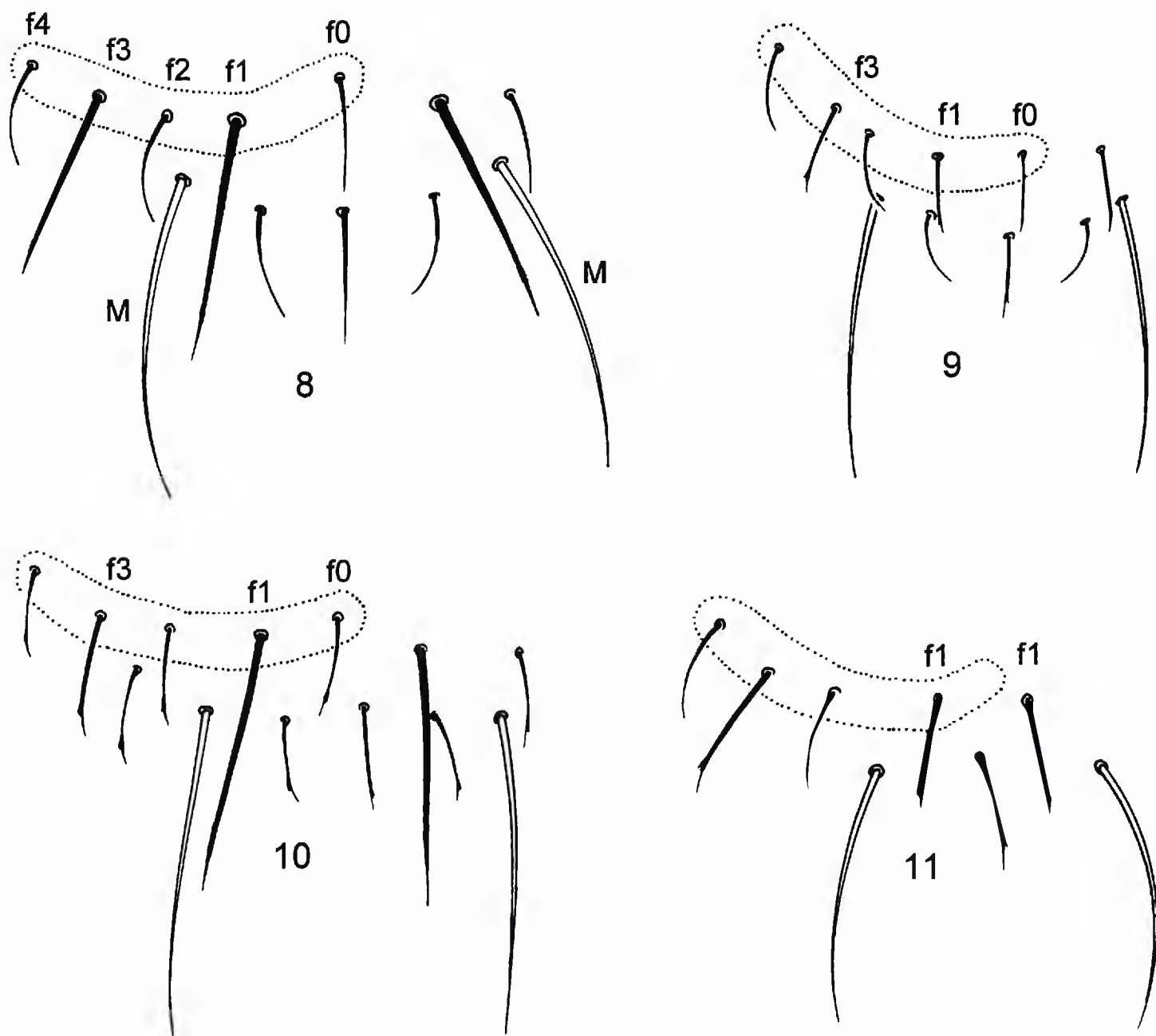
In addition, *F. wellingdae* differs from most members of the group, viz. *F. asiatica* Martynova, *F. candida* Willem, *F. ciliata* Babenko & Bulavintsev, *F. finetaria* (Linnaeus), *F. hidakana* Uchida & Tamura (sensorial chaetotaxy unknown), *F. nivalis* Packard and others, in the arrangement and/or number of setae on the anterior side of manubrium and dens. Two species, *F. kerni* Gisin (Switzerland) and *F. stella* Christiansen & Tucker (U.S.A., Iowa) have nearly the same anterior chaetotaxy of the furca. Like others, these two species have a single “corner” sensillum, inferred after the figure of the *F. stella* holotype by Christiansen & Tucker (1977) and after our own study of specimens of *F. kerni* from Slovakia (Kovac leg.).

Differences in Foil-setae.—Foil-setae are specific types of seta-like structures located only on Abd. VI and are distinguished by shape (Potapov 2001b, in press). Foil-setae (= foils) offer promise as a distinguishing taxonomical character in the *finetaria* group. Considerable differences in their shape and, more rarely, numbers are seen among closely related species. They appear to be all short (*F. nivalis*), with one (*F. wellingdae*) or two (*F. finetaria*) foils much longer and thicker, or reduced in number on the medial area (*F. kerni sensu mihi*). In addition, *F.*



Figures 1–7. *Folsomia wellingdae* Potapov & Culik, NEW SPECIES. Figure 1. Parts of furca (anterior side, dens posteriorly, mucro). Figure 2. Manubrium, anterior. Figure 3. PAO and Ant I. Figure 4. Arrangement of macrosetae, sensilla, and microsensilla on body. Figure 5. Seta-like structures (from left to right: laterodorsal sensillum of Abd. IV, microsensillum and apices of lateral sensilla of Abd. I, foil-setae of Abd. VI, macroseta of Abd. V). Figure 6. Chaetotaxy of mesothorax. Figure 7: Chaetotaxy of posterior part of abdomen; sensilla and foil-setae marked. f = foil-seta, M = macroseta, ms = microsensillum, s = sensillum.

wellingdae has all foils well differentiated, whereas in other species well differentiated foils alternate with undifferentiated ones (Figs. 8–11). The shape of the foil-setae sometimes varies slightly between populations and specimens within populations, but retains, however, differences between species.



Figures 8–11. Foil-setae of Abd. VI in members of the *finetaria* group. Figure 8. *F. finetaria* (Moscow, Russia). Figure 9. *F. nivalis* (Kamchatka, Russia). Figure 10. *F. wellingdae* Potapov & Culik, New Species. Figure 11. *F. kerni* (Slovakia, Kovac leg.). f = foil-seta, M = macroseta.

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